



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION-NO.
10/010,672	11/30/2001	Ciuter Chang	K35A0853	8677
35219	7590	04/15/2004	EXAMINER	
WESTERN DIGITAL TECHNOLOGIES, INC.			MILLER, BRIAN E	
20511 LAKE FOREST DR. -C205			ART UNIT	
LAKE FOREST, CA 92630			PAPER NUMBER	

2652

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/010,672

Applicant(s)

CHANG ET AL.

Examiner

Brian E. Miller

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-18, 20, 22-31, 33 and 35-39 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5, 7-18, 20, 22-31, 33 and 35-39 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Art Unit: 2652

Claims 1-5, 7, 9-18, 20, 22-31, 33, 35-39 are now pending.

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-5, 7, 9-18, 20, 22-31, 33, 35-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (a) In claims 1, 14, 27, the language "the shallow recessed surface being disposed between the air bearing surface and the deep recessed surface" is misdescriptive. Since the air bearing surface "is configured to form the shallow and deep recessed surfaces", so that the recessed surface is part of the air bearing surface, it is not readily apparent how the recessed surface could be disposed in that manner.

Claim Rejections - 35 USC § 102

4. Claims 27-31, 35-37 rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art (AAPA), FIGs. 1A, 1B. The AAPA sets forth a slider for a disk drive as shown in the FIGs, including: a transducer (not shown-provided on rear center pad 108); an air bearing surface 102 that is configured to include a shallow recessed surface 114, 102 (recessed from 106) and a deep recessed surface 110; a leading air bearing "region" including forward

Art Unit: 2652

projections 106 (closest to 114); at least one insular region including middle and rearward projections 106 configured to reduce stiction with a disk and together form a radius of curvature; wherein the shallow recessed surface being disposed between the air bearing surface and the deep recessed surface; wherein the insular region is bounded by both the shallow recessed surface and the deep recessed surface (the deep recessed surface bounds the shallow recessed surface as well) (re claims 30 & 31); a center rear pad 115 is disposed near the trailing end of the slider (re claim 36); the insular regions are shaped at least as an ellipse (re claim 37).

5. Claims 1-5, 7, 9-11, 13-18, 20, 22-24, 26-31, 33, 35-37, 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Otsuka (US 6,529,346). Otsuka sets forth a slider "S" (mainly elements 10 & 11) for a disk drive (see FIG. 10) as shown in the FIGs. 1-2, including: a transducer 11 provided on the rear center pad 13 (20); the slider having a leading 10a and trailing end 10b; an air bearing surface that is configured to include a shallow recessed surface(s) 12 (10d surrounding the surfaces 12) and a deep recessed surface 15 which forms a negative pressure cavity as known in the art; a leading air bearing region (adjacent 10a); a plurality of insular regions 17 configured to reduce stiction with a disk (re claims 9, 22, 35), such that the insular region(s) and leading air bearing region each define a radius of curvature (or crown) (see FIG. 2); wherein the shallow recessed surface being disposed between the air bearing surface and the deep recessed surface; wherein the insular region is bounded by either the shallow recessed surface and/or the deep recessed surface (re claims 4-5, 17-18, 30 & 31); wherein the height differential between the one insular region and the leading air bearing region is less than 4 micro inches, i.e., 30 nm (see col. 9, last line)(re claims 7, 20, 33); a center rear pad 13 is disposed near

Art Unit: 2652

the trailing end of the slider (re claims 10, 23, 36); the insular regions are shaped at least as a circle (see FIG. 1) (re claims 11, 24, 37) and are formed with a DLC layer (re claims 13, 26, 39).

Claim Rejections - 35 USC § 103

6. Claims 1-5, 7, 9-18, 20, 22-26, 33, 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA. For a description of the AAPA, see the previous rejection. While the AAPA only discusses particulars to the slider, the claimed disk drive including a “disk”, a “headstack” having a “body portion”, “bore”, “pivot axis”, an “actuator arm”, “head gimbal assembly”, etc. while it may have been inherent anyway, Official Notice is taken that the above recited components are notoriously old and well known elements of a magnetic disk drive, i.e., necessary for the proper operation thereof, and thus would have been obvious to have provided the slider of the AAPA into such a device. The motivation would have been: providing the aforementioned slider (having protrusions) into such an apparatus would have prevented the slider from sticking to the disk surface upon landing and/or takeoff, as would have been realized by a skilled artisan. With respect to the difference in height between the leading air bearing region and the insular region being 4 micro inches, and the surface area of each insular region being between 100-2000 microns squared, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided such a range, as it would have been apparent to a skilled artisan that the more insular regions would reduce stiction, but too many would affect flying characteristics of the slider. The motivation would have been: lacking any criticality or any unobvious or unexpected results, the given range of surface area would have been readily encompassed by routine engineering optimization and experimentation.

Art Unit: 2652

Moreover, absent a showing of criticality, i.e., unobvious or unexpected results, the relationships set forth in claims 7, 12, 20, 25, 33, 38 are considered to be within the level of ordinary skill in the art. The law is replete with cases in which the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found. Furthermore, it has been held in such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range(s); see *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Moreover, the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions; see *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

7. Claims 12, 25, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka. For a description of Otsuka, see the rejection, *supra*. Although Otsuka does not expressly disclose the surface area of the insular regions being between 100-2000 microns squared, it may encompass this wide range inherently. Irrespective of that however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided such a range, as it would have been apparent to a skilled artisan that the more insular regions would reduce stiction, but too many would affect flying characteristics of the slider. The motivation would have been: lacking any criticality or any unobvious or unexpected results, the given range

Art Unit: 2652

of surface area would have been readily encompassed by routine engineering optimization and experimentation. (See also the cited case law in the previous 103 rejection, *supra*)

Response to Amendment

8. Applicant's arguments filed 2/6/04 have been fully considered but they are not persuasive.

A...Although the claims were amended in an attempt to overcome the prior art of record subsequent to an interview, since the claims no longer include the "co-planar" limitation, and the amendment closely follows a previously rejected claim, along with a different interpretation of "a leading air bearing region", the Examiner has reinstated the rejection with respect to the AAPA (FIGs. 1 & 2) and has maintained the Otsuka rejection(s) appropriately. The Examiner was previously interpreting the "leading air bearing region" too narrowly, and points out that this broad language could encompass any portion of the slider forward of the middle of the slider. Furthermore, nowhere in the claim(s) is it specifically recited (as discussed in the interview) that the leading air bearing "region" and the insular region, together, form a *single* radius of curvature. These two features are considered critical to applicant's invention, since the prior art is so closely related.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (703) 308-2850. The examiner can normally be reached on M-TH 7:15am-4:45pm (and every other friday).

Art Unit: 2652

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brian E. Miller
Primary Examiner
Art Unit 2652

Bem
April 13, 2004